WHAT IS CLAIMED IS

1. A control circuit for an electronic ballast with a power switch, comprising:

a driver circuit for driving the power switch;

a switching control circuit coupled to the driver circuit for providing signals to the driver circuit for operating the power switch;

a feedback circuit coupled to the driver circuit and the control circuit for providing control information to the control circuit based on output values of the driver circuit;

a fault responsive circuit coupled to the feedback circuit and the driver circuit for responding to faults detected in the feedback circuit; and

the fault response circuit is operable to disable the driver circuit upon detection of a fault.

2. The control circuit according to claim 1, wherein the switching control circuit is a voltage controlled oscillator.

3. The control circuit according to claim 1, further comprising:

a fault criteria in the fault response circuit; and

the fault criteria includes at least one of a crest factor indication and a zero volt switching indication.

4. The control circuit according to claim 1 further comprising:

a power input for supplying power to the control circuit; and

a bootstrap diode coupled between the power input and the driver circuit to contribute to providing a start up voltage for the driver circuit.

5. The control circuit according to claim 1, further comprising a minimum frequency input signal supplied to the switching control circuit for providing a minimum frequency for operation of the switching control circuit.

6. The circuit according to claim 1, further comprising a current source selectively connectable to the switching control circuit for adjusting a switching control circuit input.

7. The circuit according to claim 6, wherein the current source is coupled to the feedback circuit to adjust the switching control circuit input based an operational indication provided from the driver circuit to the feedback circuit.

8. The circuit according to claim 1, wherein the feedback circuit is operable to process a signal from the driver circuit and influence the switching control circuit to obtain zero volt switching and minimum current switching for the switch.

9. An integrated circuit for driving a switching half bridge to supply power to a load, the circuit comprising:

a half bridge driver for supplying control signals to the half bridge;

a switching control circuit coupled to the half bridge driver for controlling the half bridge driver to supply signals to the half bridge;

a feedback circuit coupled to the half bridge driver and the switching control circuit to modify operation of the switching control circuit based on an operational value of at least one of the half bridge driver and the half bridge; and

fault detection circuitry coupled to the half bridge driver and the feedback circuit for disabling outputs of the half bridge driver based on at least one of excessive current drawn by the load and non-zero volt switching in the half bridge.

10. The circuit according to claim 9, further comprising a current source coupled to an input of the switching control circuit and selectively controllable by the feedback circuit to influence operation of the switching control circuit.

11. The circuit according to claim 9, wherein the switching control circuit is a voltage controlled oscillator.

12. The circuit according to claim 9, further comprising a bootstrap diode coupled to the half bridge driver.

13. A circuit according to claim 9, further comprising a high voltage switch in the feedback circuit for sensing an output value of the half bridge driver.

14. The circuit according to claim 9, wherein the excessive current is determined as a peak current value being a multiple of an average current value for a specified period of time.

15. The circuit according to claim 9, further comprising adaptive control circuitry in the feedback circuit for influencing the switching control circuit to obtain zero volt switching and minimum current switching at the half bridge.

16. A method for controlling an electronic ballast to deliver power to a load, comprising:

driving a switching half bridge to supply power to the load;

sensing a half bridge operational parameter;

determining a feedback control based on the sensed parameter;

applying the feedback control to influence control of the half bridge; and

determining whether a fault condition exists based on the sensed parameter.

17. The method according to claim 16, further comprising preventing the half bridge from being driven in the presence of a fault condition.

18. A method for controlling an electronic ballast including a switching half bridge during ignition of a lamp, comprising:

alternately switching switches in the half bridge at a high frequency at an initial stage;

decreasing the switching frequency toward a resonant load resonance frequency to increase current and voltage supplied to the lamp;

preventing the half bridge circuit from operating if there is at least one of a lamp ignition failure and an excessive load current; and

maintaining the switching frequency near the resonant frequency after the lamp has ignited.

19. The method according to claim 18, further comprising operating a voltage controlled oscillator in conjunction with a half bridge driver to provide switching control signals to the switching half bridge.

20. The method according to claim 19, further comprising supplying a control voltage to the voltage controlled oscillator to adjust the switching frequency applied to the switching half bridge.

21. The method according to claim 16, further comprising modulating a parameter for driving the switching half bridge to decrease EMI noise emissions.

22. The circuit according to claim 1, further comprising a parameter modulation control coupled to the switching control circuit for modulating an output of the switching control circuit to vary the signals provided to the driver circuit between a specified range.

23. The control circuit according to claim 22, wherein the parameter modulation circuit modifies a voltage input to the switching control circuit to be within 4.9 and 5.1 volts.

24. The control circuit according to claim 1, further comprising a sense signal coupled to the power switch and to the feedback circuit and operable to provide a current sense by measuring a voltage across the power switch.